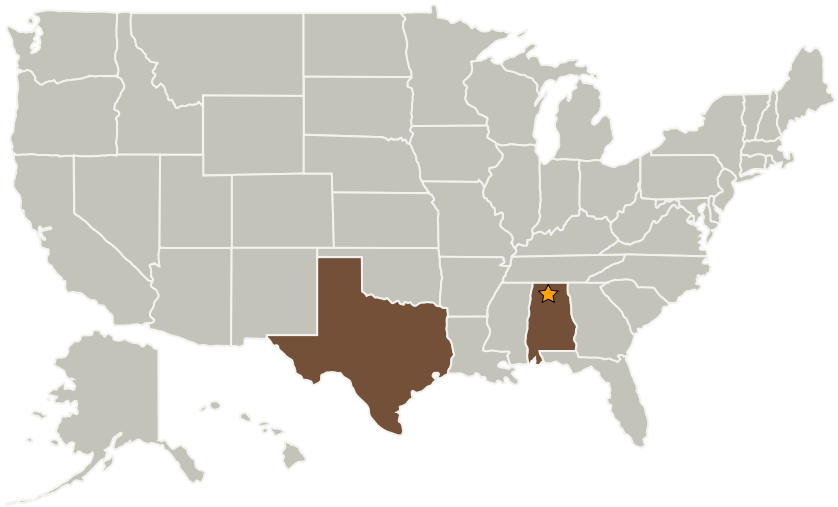
Automated Rendezvous and Docking Infrastructure to Support Commercial Space Development, Phase I

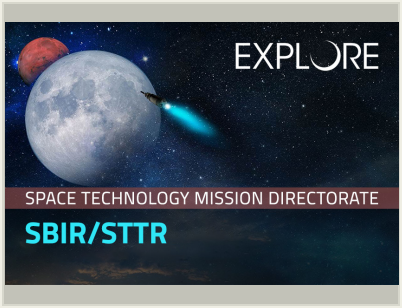
Completed Technology Project (2005 - 2005)

Project Introduction

NASA's safety mandate for crewed and high value spacecraft currently necessitates design requirements that create a cost barrier for commercial companies trying to provide on-orbit logistics services for NASA. The proposed innovation offers a means to facilitate commercial involvement in on-orbit servicing by developing a spacecraft that removes this burden from commercial vehicles. The spacecraft will: ? Perform automated rendezvous and capture to ferry commercial spacecraft to target spacecraft ? Provide a safe interface between simple, low cost, commercial spacecraft and high value targets (ISS, CEV, Lunar Lander, propellant depot, or high value satellites) This will serve as key infrastructure element to enable emerging commercial space companies and other developers of low cost systems to play significant roles in NASA's Exploration program and/or ISS re-supply activities. This infrastructure will: ? Prevent restrictive and extremely expensive fault tolerance, safety, and Human Rating requirements from being levied on the commercial vehicles, ? Remove the need for commercial vehicles to design, develop, and test independent automated rendezvous and docking (AR&D) systems, ? Reduce the amount of expensive AR&D and safety related hardware launched and discarded on each flight, and ? Reduce the cost of integrating each spacecraft through standardized interfaces.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Odyssey Space Research, LLC	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Houston, Texas

Primary U.S. Work Locations	
Alabama	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

David F Strack

Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.5 Autonomous Rendezvous and Docking
    - TX04.5.3 Rendezvous, Proximity Operations, & Capture (RPOC) Flight and Ground Systems